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AUTHOR Traxler, Gene
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ABSTRACT

This training module on MacDraft is part of a computer drafting skills unit on communications technology for grades 9-12. The objective is for each student to complete a drawing on the MacIntosh computer using the MacDraft software program. This drawing is to be dimensioned with a dual system and is to include a border and title block. This module contains activities, a list of resources, and evaluation requirements--accuracy of drawing, adequate dimensions and correct placement, and layout drawing. The following steps are described: (1) accessing the program; (2) getting set up; (3) drawing the line; (4) editing the line; (5) creating a box; (6) rotation of lines or boxes; and (7) the arc. A MacDraft assignment is included. (NLA)

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High-Technology Training Module

Module Title: INTRODUCTION TO MACDRAFT

Unit: COMPUTER DRAFTING SKILLS

Course: COMMUNICATION TECHNOLOGY

Grade Level (s): 9 - 12

Developed by: GENE TRAXLER

Date: OCTOBER, 1989

School: MENOMONIE HIGH SCHOOL

1715 5TH STREET W., MENOMONIE, WI 54751

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INTRODUCTION TO MACDRAFT

ACTIVITIES: During the semester, each student will be responsible for completing a drawing on the Macintosh computer using the MacDraft software program. This drawing will be dimensioned with a dual system, and will include a boarder as well as a title block. (SEE LAST PAGE)

RESOURCES:

Macintosh Computer
MacDraft Software Program
Module Booklet
Program Manual

EVALUATION: (50 Point Total)

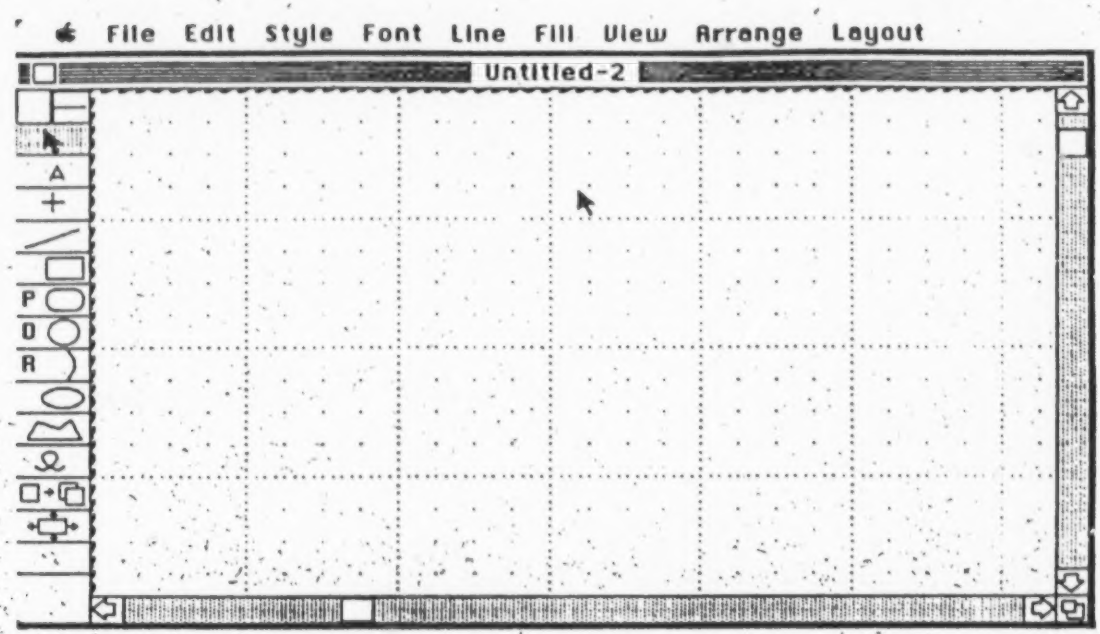
The drawing will be printed out, handed in and checked for the following criteria:

1. **Accuracy of drawing (25 points)**
2. **Adequate dimensions and correct placement (15 points)**
3. **Layout of drawing (10 points)**

INTRODUCTION TO MACDRAFT

Step 1 - Accessing the Program

- Insert the MacDraft disk into the drive on the front of the MacIntosh.
- When the disk icon appears in the upper right-hand corner of the screen, double click on the icon.
- When the contents of the disk appear on the screen, double click on the MacDraft Icon.
- This will open up a new MacDraft file. (untitled)



- The screen above is what you should see when you have accessed MacDraft.
- Note the boxes on the left side of the screen. These are the tools you will use to create drawings with MacDraft.
- The menus across the top of the page (file, edit...) access many different functions of the MacDraft program.

SPECIAL HINTS:

The two most fundamental principles of MacDraft are:
First, you select an item.
Second, you Choose what to do to the item you have selected.

ERASING
To delete a part or all of a drawing, click the tip of the arrowhead on the area you want to erase. The small boxes will appear, then just hit backspace and this area will be erased.

(Note: To erase the entire screen, pull down the Edit menu to Select All, then hit backspace.)

DIMENSIONING
To dimension a line, open the Line menu and pull down to the bottom symbol (two arrowheads with a HH between them). Click on one of the line drawing tools (• or /), then move the cross-hairs to the point that you want the dimension line to start. Hold the mouse button down, and drag to the end point of the dimension line, then release the button.
Under the Line menu the "Line Inside," "Line Outside" or "Line Centered," let you choose where you want your dimension lines.

AREA
To find the area of any object, click on the object(s) you desire, open the View menu and choose "show area". The area will be displayed in the center of the object automatically. To get rid of the area, open the View menu and choose "Hide Area."

STANDARD TO METRIC OR VICE VERSA
To change any dimensions to metric, pull-down the Layout menu to "Metric," select any or all of the objects you want converted. Open the Edit menu and choose "Convert Units."

FRACTION TO DECIMAL
Open the View menu and choose "Set Size Units." The Units box will appear, choose the units that you desire. Select all of the lines and objects to be converted. Open Edit menu and choose "Convert Units."

A good way to learn MacDraft is to work with as many different options as you can. The User's Manual is available for anything that you have problems with, USE IT!!

Step 2 - Getting set up

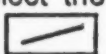
* Before you begin to create your drawing, you should access the "LAYOUT" menu. Here you will find the scale, grid and ruler options. Set you scale to the desired size. (1 TO 1 FULL SIZE for our activity)

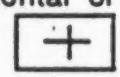
* Set grid as small as you can in order to have the most flexibility in your drawing. (no larger than $\frac{1}{16}$" for this activity)

* Select the "show rulers" option for this activity also.

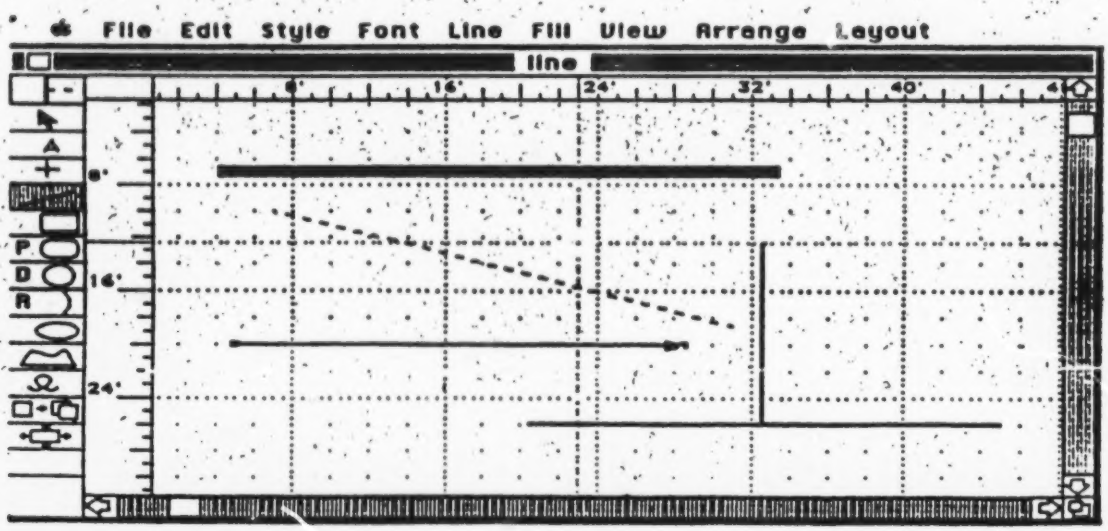
* You are now ready to begin. Let's try drawing a line.

Step 3 - Drawing a line

* In order to draw a line, select the line box on the left of the screen. The line box looks like this.  Move the mouse arrow onto the box and click once. The box should now be shaded. As you move the arrow back onto the screen you will now see a dotted cross line which indicates where your line will start. Hold down the mouse and move it across the screen. You should see a line being drawn. Try it!!

* If you want to draw a line which is horizontal or verticle, simply select the box with the "+" sign inside of it. 

* Below is an example of what the screen will look like.



Step 4 - Editing a line

* Once you have created a line, you may find that it is too long or too short. Don't worry!!! MacDraft will allow you to edit the length, angle, or maybe even the thickness of the line. We will experiment with each of these features.

* Changing the length of a line is a simple operation. Once you have drawn a line, you will notice the small boxes that appear at each end of the line. (Place arrow at END of the line.)
Hold down the mouse button and you will see a small "+" sign appear. Move the mouse in the direction you want to change the line. You can shorten, lengthen, or change the angle of the line. But what if you only want to move the line??

* A line can be moved by moving the mouse to the middle of the line instead of the end. Once the arrow is on the line, hold the mouse button down. A white arrow should replace the normal black one. If it does, you can move the line by holding the button down and dragging it to the desired position.

* What if you want your line to be thick, thin, broken, or pointing in one direction? No Problem!!! At the top of the screen you will find a menu entitled "LINE." Hold down the mouse and you will see an assortment of line types and thicknesses to choose from. If a line in your drawing is already selected, the line will automatically become the type you have highlighted. If not, select the line you wish to change and then select the appropriate line thickness or type.

* Note the arrows at the bottom of the "LINE" Menu. I used the arrows to form the lines on the cover of this activity. They can be adjusted in the same manner as the regular lines mentioned above.

* **The editing you have now experimented with on the lines will also work on boxes, circles, arcs, and other shapes you might wish to create with MacDraft.**

(NOTE: To move or alter a line, box or circle, you must click on the arrowhead in the tool column, then move the arrowhead to the area you want to change, then click again.)

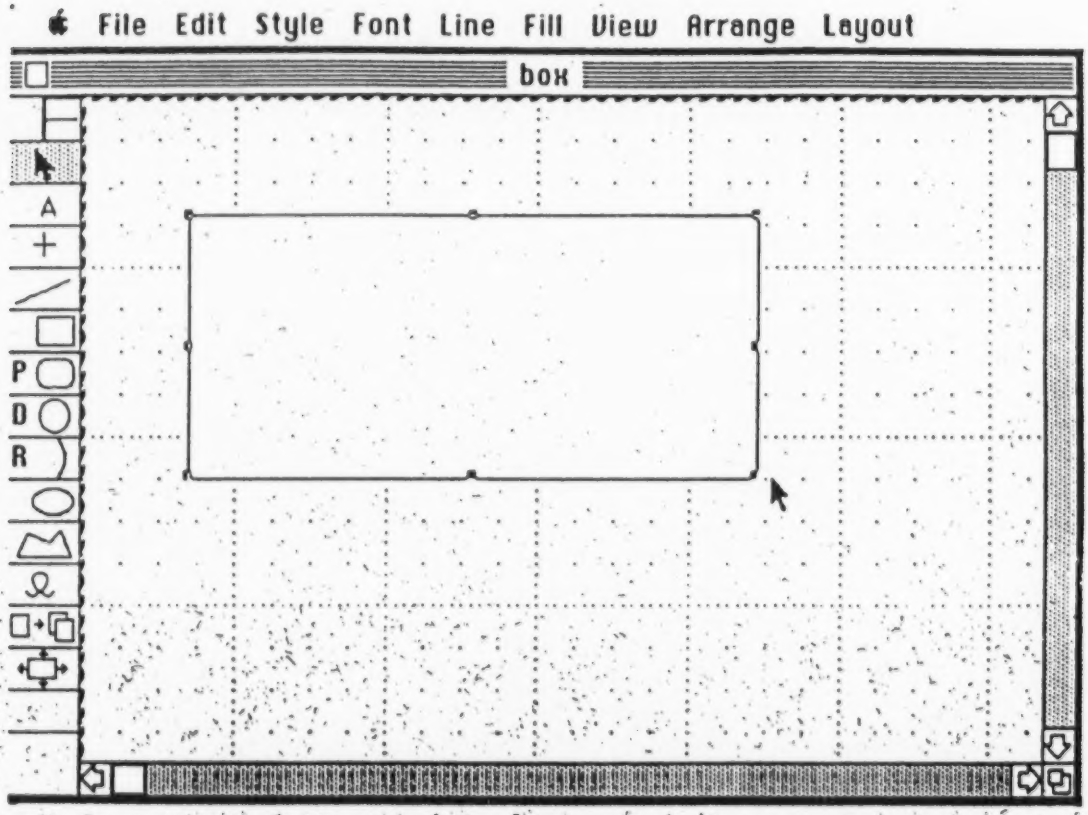
Step 5 - Creating a Box

- Select the from the tools at the left side of the screen.

- Move the mouse arrow to the point where you want the corner of the box to begin. Hold down the mouse button and move the mouse until the box is the size you want.

- You can change the size of a box the same way you edited a line. Try it!

- The screen below shows a box being created.



*** You can move a box by putting the tip of the arrowhead anywhere on the line <u>except</u> the small boxes, then hold down the mouse and drag to the new location.**

- To stretch or shrink a box place the arrow on the corner and move the mouse in the direction you want to adjust the size.

Step 6 - Rotation of lines or boxes

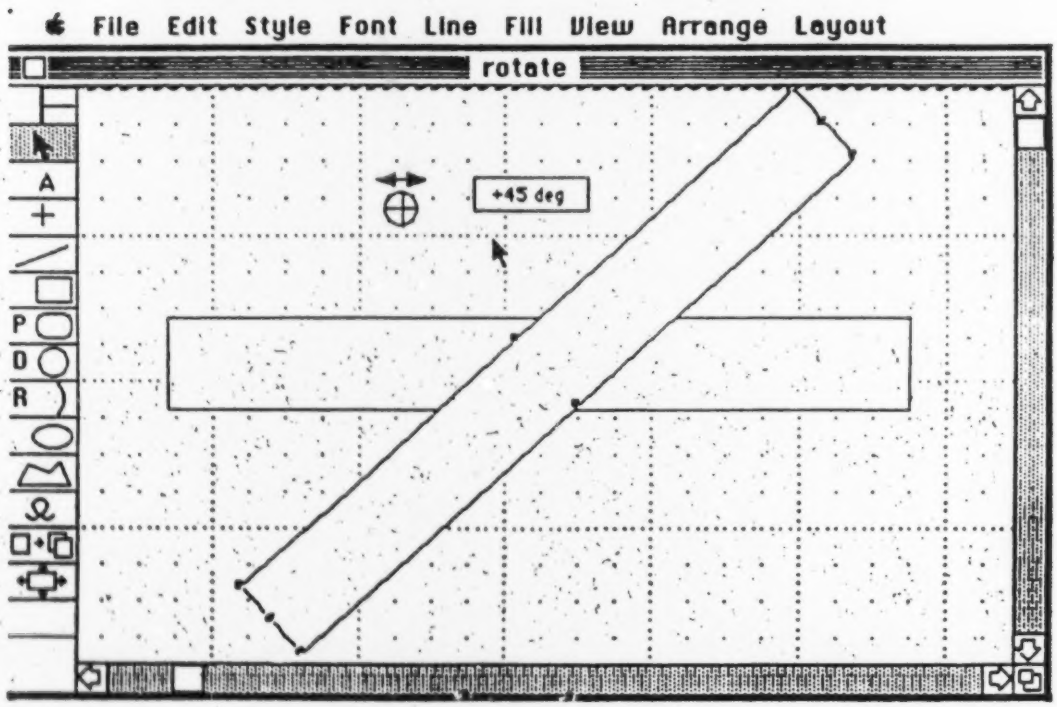
• Rotation is accomplished by selecting the object you want to rotate. (click on it with the mouse)

• Under the "ARRANGE" menu at the top of the screen, you will see the "ROTATE" option. Select it and a small icon will appear on the screen. Hold the mouse button down and move it left or right You will see the object rotate.

• If you want to know the number of degrees you are rotating, select the "SHOW SIZE" option under the "VIEW" menu.

• "SHOW SIZE" will also work with all of the other tools of MacDraft. It will indicate length of lines, as you draw them. Also length and width of boxes and diameters of circles.

• The screen below shows the rotation function.



Step 7 Continued...

* Arcs are one of the more difficult objects to construct. The following procedure should make it easy for you to draw them.

* Select the "Arc" box from the tools on the left [R)].

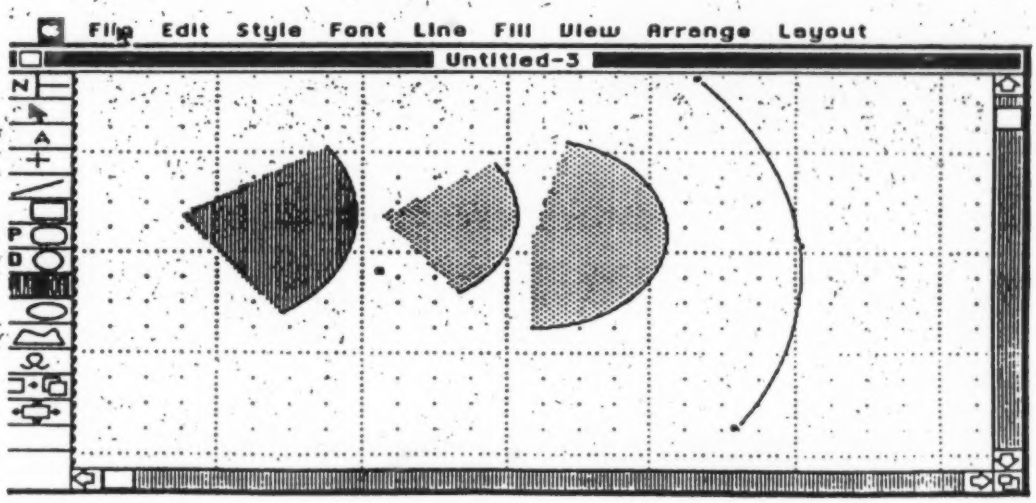
* Once you have selected the arc tool, move the cross hair location indicator to the spot you want the center of the arc to be located. This is not a point on the arc, but rather a center point about which the arc is located.

* Now move the mouse, keeping the button down. Move the mouse until the desired radius has been reached. Remember, the radius is the distance from the center to any point on the arc. Release the mouse button and then move the mouse. You should see the arc forming as you move the mouse.

* Click the mouse when your arc is the desired size and it will appear on the screen. It can now be edited. To change the radius on the arc (make it larger or smaller) position the arrow on the **unfilled box at the center of the arc, hold down the mouse button and drag to your desired size.**

* By positioning the arrow on the end points of the arc, you can change the angle of the arc (make it longer or shorter).

* The screen below shows an arc and some of the changes you can make.



PRACTICE USING THESE OPTIONS:

UNDER THE VIEW MENU:

"ZOOM IN"
"ZOOM OUT" OPTIONS-Lets you enlarge or reduce the screen..

"SHOW SIZE"- Shows the sizes of the lines as you draw them, and the angles.

UNDER THE LAYOUT MENU:

'SET GRID"- Gives you the option of less sensitivity in the mouse, use the "Snap to Grid" for this assignment. (USE 1/4")

"SHOW RULERS"- Lets you see your rulers on the top and side of the drawing.

UNDER THE ARRANGE MENU:

"BRING TO FRONT"
"SEND TO BACK"-Allows you to move parts of your drawing behind other parts, or bring certain parts forward.

TO POSITION YOUR DRAWING:
Construct your drawing anywhere it will fit on the screen. MacDraft allows you to move anything around after it is drawn.

To center your project: Under EDIT open "Select All", you can then move the entire drawing by clicking the arrowhead anywhere on the drawing, holding down the mouse button and dragging to the new position.

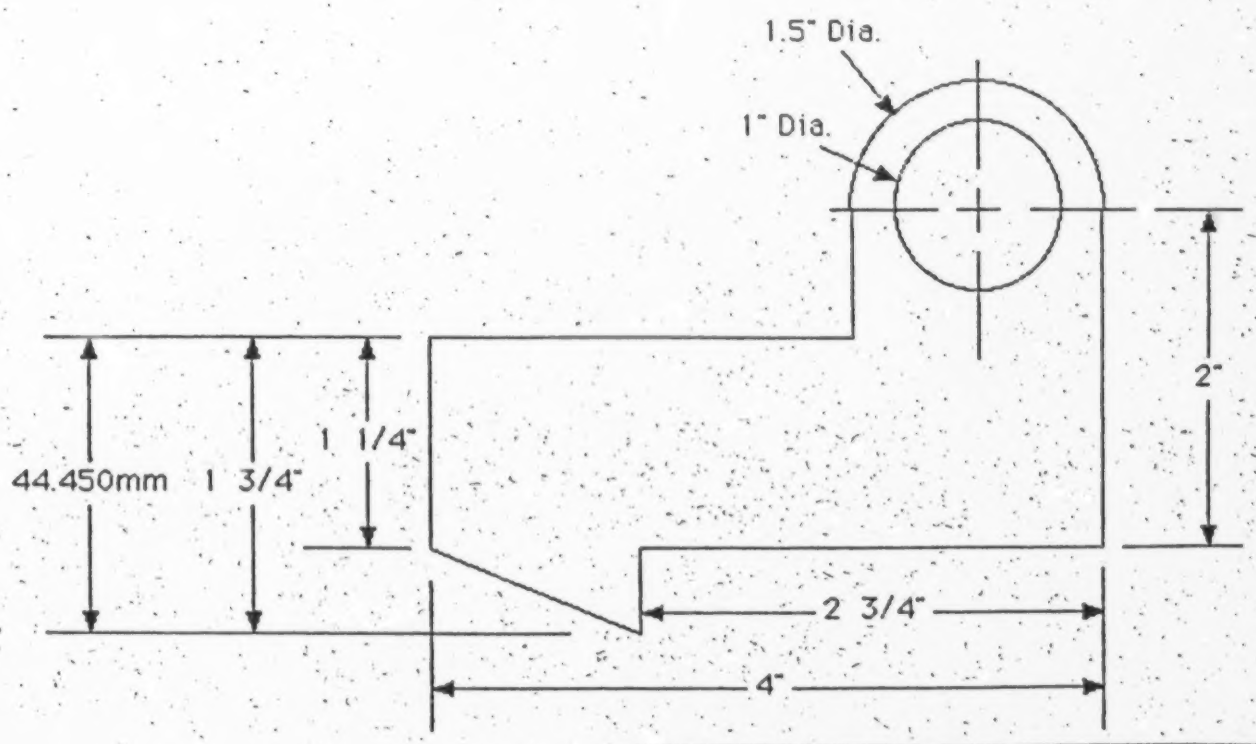
Menomonie High School
Introduction to Mac Draft
Mr. Traxler

MacDraft Assignment

INTRODUCTION:

Each student will use the MacDraft system to duplicate, as closely as possible, the Ratchet drawing below. One dimension should be a dual dimension (metric and standard). Make a print-out of your finished product.

NOTE: Use the special hint sheets



RATCHET	
SCHOOL: MENOMONIE HIGH	
AUTHOR:	SCALE: 1"=1"
DATE:	DRAWING #1